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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,853	04/05/2004	Shigeru Yagi	119349	1813
25944	7590	09/15/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			MONBLEAU, DAVIENNE N	
			ART UNIT	PAPER NUMBER
			2878	
DATE MAILED: 09/15/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/816,853

Applicant(s)

YAGI ET AL.

Examiner

Davienne Monbleau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/5/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The IDS filed on 4/5/04 has been acknowledged and a signed copy of the PTO-1449 is attached herein.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 48. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5 and 19 recite the limitation “a transparent substrate on which the semiconductor layer and the first electrode are disposed.” The drawings, however, depict that the transparent substrate (24) is disposed over the image sensor and semiconductor layer (28). Thus, the claim recitation is inconsistent with the drawings. For purposes of examination, the examiner is interpreting Claim 5 to read in accordance with the drawings: the transparent substrate is disposed over the semiconductor layer and first electrode.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, and 5, to the extent taught and understood, are rejected under 35

U.S.C. 102(e) as being anticipated by Suzuki et al. (U.S. 2002/0043613).

Regarding Claim 1, *Suzuki* discloses in Figures 2 and 3 a light detection device comprising a light-receiving element (13) including a semiconductor layer (31) for detecting light and a first electrode (12) which is electrically connected with the semiconductor layer (31), an insulative substrate (10) for supporting the light-receiving element (13), and a second electrode (11) which is provided so as to be exposed at a first face and a second face of the insulative substrate (10), wherein the light-receiving element (13) is disposed on the first face of the insulative substrate (10), and the first electrode (12) is electrically connected with the second electrode (11) that is exposed at the first face of the insulative substrate (10).

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Regarding Claim 3, *Suzuki* discloses in Figure 2 that the second electrode (11) comprises a metal electrode.

Regarding Claim 5, *Suzuki* discloses in Figure 2 a transparent substrate (15) disposed over the semiconductor layer (31) and the first electrode (12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 5-17, and 19-21, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh et al. (U.S. 6,649,834).

Regarding Claim 1, *Hsieh* teaches in Figure 2 a light detection device comprising a light-receiving element (34) and a first electrode (56) which is electrically connected with the light-receiving element (34), an insulative substrate (32) for supporting the light-receiving element (34), and a second electrode (30) which is provided so as to be exposed at a first face and a

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second face of the insulative substrate (32), wherein the light-receiving element (34) is disposed on the first face of the insulative substrate (32), and the first electrode (56) is electrically connected with the second electrode (30) that is exposed at the first face of the insulative substrate (32). *Hsieh* teaches an image sensor but does not teach the type of image sensor (i.e. semiconductor.) It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use a semiconductor light-receiving element, which would comprise a semiconductor layer, because semiconductor detectors are often used as image sensors (i.e. CMOS detector arrays) and require stable, insulated packaging.

Regarding Claim 15, *Hsieh* teaches in Figure 2 a light detection device mounting method comprising preparing a light-receiving element (34) which includes a first electrode (56) which is electrically connected to the light-receiving element (34), providing a second electrode (30) so as to be exposed at a first face and a second face of an insulative substrate (32), preparing the light detection device by disposing the light-receiving element (34) on the first face of the insulative substrate (32) such that the first electrode (56) is electrically connected with the second electrode (30) that is exposed at the first face of the insulative substrate (32), and surface-mounting the light detection device on a circuit board (51) such that the second electrode (30) that is exposed at the second face of the insulative substrate (32) is connected with an external terminal of the circuit board (51). *Hsieh* teaches an image sensor but does not teach the type of image sensor (i.e. semiconductor.) It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use a semiconductor light-receiving element, which would comprise a semiconductor layer, because semiconductor detectors are often used as image sensors (i.e. CMOS detector arrays) and require stable, insulated packaging.

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Regarding Claims 2 and 16, *Hsieh* teaches in Figure 2 that the first electrode (56) is constituted by at least two electrodes and the second electrode (30) is constituted by at least two electrodes.

Regarding Claims 3 and 17, *Hsieh* teaches in Figure 2 that the second electrode (30) comprises a metal electrode.

Regarding Claims 5 and 19, *Hsieh* teaches in Figure 2 a transparent substrate (38) above the light-receiving element (34) and the first electrode (56).

Regarding Claim 6, *Hsieh* teaches in Figure 2 that the light-receiving element (34) comprises a transparent substrate (38) but does not teach that the first electrode (56) comprises a first layer and a second layer, and the first layer, the semiconductor layer and the second layer are laminated on the transparent substrate in this order, and the first layer of the first electrode is transparent. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to alter the electrode configuration in *Hsieh* to accommodate other housing arrangements, which may then require using transparent electrodes.

Regarding Claim 7, *Hsieh* teaches in Figure 2 that the first electrode (56) is connected with the second electrode (30) that is exposed at the first face of the insulative substrate (32) via a conductive member (36).

Regarding Claim 8, *Hsieh* teaches in Figure 2 that excluding a portion that is connected by the conductive member (36), at least a portion of a face of the light-receiving element (34) which face opposes the insulative substrate (32) is fixed to the insulative substrate (32) with an adhesive layer there between (49). (See also column 3 lines 29-31.)

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Regarding Claim 9, *Hsieh*. The light detection device of claim 1, wherein a recess portion is formed in the insulative substrate (32) and the light-receiving element (34) is embedded in the recess portion.

Regarding Claims 10-12 and 20, see discussion on Claims 1 and 15. It would have been obvious to one of ordinary skill in the art at the time of the invention to use particular semiconductor materials and elements in *Hsieh* since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. Materials have specific inherent characteristics that determine which wavelengths will be absorbed and/or transmitted, thus defining the wavelength range of the detector.

Regarding Claims 13 and 21, *Hsieh* teaches in Figure 2 that the second electrode (30) is provided so as to be exposed at a front face and a rear face of the insulative substrate (32), the light-receiving element (34) is disposed on the front face of the insulative substrate (32), and the first electrode (56) is electrically connected with the second electrode (30) that is exposed at the front face of the insulative substrate (32).

Regarding Claim 14. The light detection device of claim 1, wherein a plurality of the light-receiving elements are provided on the insulative substrate.

Claims 4 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh in view of Oyoshi et al. (JP 7-38138).

Regarding Claims 4 and 18, *Hsieh* teaches an image sensor (34) but does not teach the desire wavelength detection range. *Oyoshi* teaches in the abstract a UV sensor comprising a

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substrate that absorbs visible light. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a substrate that absorbs visible light in *Hsieh*, as taught by *Oyoshi*, to lessen the detector sensitivity to undesired wavelengths, for example visible light, when the detector is a UV detector.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure because they teach various light detection device configurations comprising insulating substrates, semiconductor detectors, and specific electrode arrangements.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 571-272-1945. The examiner can normally be reached on Mon-Fri 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Davienne Monbleau

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